



Presentation

FULL DETAILS AND TRANSCRIPT

Developing Number Sense in Kindergarten

Worthington Hooker School, Connecticut • June 2008

Topic: National Math Panel: Critical Foundations for Algebra
Practice: Mathematics Preparation for Algebra

Highlights

- Goals for K: good understanding of number sense, values of numbers 0-10, number order, matching groups to numbers, beginning addition and subtraction, partners of five and ten
- Description of lesson: finding “missing partner” or addends of numbers up to 10 via a game; goal of using different ways of finding the “missing partner”
- Demonstrating how to do the task by having students act out the problem
- Practicing the addends game in small groups using different materials
- Teacher observing small groups to assess informally how students talked about the numbers, accuracy, solutions used by different students
- Lesson closure

About the Site

Worthington Hooker School
New Haven, CT

Demographics

45% White

25% Black

22% Asian

7% Hispanic

37% Free or Reduced-Price Lunch

11% English Language Learners

6% Special Education

The Worthington Hooker mathematics program exemplifies the goals of the New Haven School District in holding high expectations for all students and preparing them for STEM career options. The school implements these features:

- Focus on fewer topics at deeper level of understanding;
- Cross-grade units with “significant tasks;”
- Benchmark testing four to seven times a year;
- Extensive focus on number sense and fractions;
- Roles for specialist teachers (i.e., physical education, music, visual arts) in providing additional math practice;
- Bi-monthly school level data team meetings; and
- Monthly coaches meetings at a district level to review results of school-level data team meetings.

Full Transcript

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Welcome to Teaching Number Sense in Kindergarten.

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Kate Buckley, I teach Kindergarten at Worthington Hooker School. My goal for kindergarten for my kids by the end of the year is to have a good understanding of number sense, which also directly relates to our benchmarks.

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I look for the students to have a good understanding of the values of the numbers zero to ten. I also look to see if they can count, they have number order, if they can match groups of numbers.

Slide 4

I taught a lesson this morning with the students. We made Math Mountains—that's what we call them. There is a group of "tiny tumblers," we like to call them, that live at the top of the Math Mountain. Some of the tiny tumblers will roll down one side of the mountain, which would be their first partner or addend.

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We started the lesson doing the Math Mountains in a whole group setting. I started by having some of the students represent the tiny tumblers that were living at the top of the math mountain, and I did this because—especially in kindergarten—making the lesson real for them is having them be involved. This also taps into the kinesthetics of the lesson.

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My goal for the lesson was to have them use different ways of finding the missing partner. They could count the tiny tumblers that they were drawing to use them as a manipulative, or some of them might think subtraction. We talked about it a little. My ultimate goal—to find that missing number and understand that the two partners at the bottom add up to the number at the top.

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I have them work in small groups to practice. As the students were working in their small groups today, I was walking around to assess them. This wasn't a lesson where I would have a formal assessment, so it was like an informal assessment of seeing how they were talking about the numbers with each other.

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First of all, were they getting the correct partners at the bottom of their Math Mountains? But then, also, not only just were they right, because that's not really what I was looking for. I want to make sure that, yeah, if they do have those correct numbers, well, "How did you find them?" or "What was your conclusion now that you have those two numbers? What does that tell you?" Not just leaving it at the picture and the numbers because that's an empty representation. So I really wanted to dig and get the how and the why and, "Now what do you know about the numbers together?" So, I met with one group, for example, and they had seven at the top and three on one side and four on the other, and I noticed those were right—that was my first in my head to check. And then I asked, "Well who picked the first number? Who picked four? Well, how did you find three?" And the student answered, "Well, I saw the four tiny tumblers on one side

and I continued to count on... four, five, six, seven.” So, they were telling me right in their explanation that they used the strategy of counting on, and the representation of drawing the tiny tumblers to come to the answer.

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I also plan on having the students play the same game over again, and also not only using the same game, but having the students use other manipulatives that we have in the room to practice this concept too. We have counters, we have buttons and shells; you need to have that extra practice in order to really internalize the concept and really understand and work with those numbers.

Slide 10

At the end of the lesson, we regrouped. I wanted to make sure there was closure to the lesson, and I wanted the students to take a little bit of time to reflect on— yes, they may have been having fun working with a partner, but what, really, what they were learning, or what did they get out of the lesson. During this part of the lesson, the students were talking about how they came up with their answers.

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“Well, how did you figure it out?” “I didn’t know there were six, how did you find it out?” And I had a couple different responses, which is exactly what we were looking for. Some just said, “Oh well, I just remember that partners of eight: two and six.” Some said, “Oh, I counted the tiny tumblers that were standing there.” It was like another manipulative: their own bodies.

Slide 12

By the end of Kindergarten, what they have learned it should really help with what they are going to do in future years. I want them to have a deep understanding of the value of numbers, not just drawing on a page—that they represent something, and in order to work out problems or addition or subtraction or, in the future, multiplication, division how those numbers work together.

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To learn more about teaching number sense, please see the additional materials on the Doing What Works website.